FACTORS AFFECTING THE SUCCESS OF NANOTECHNOLOGY PRODUCT COMMERCIALISATION IN MALAYSIA

MAWADDAH BINTI MOHAMAD

MASTER OF SCIENCE
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MAWADDAH BINTI MOHAMAD

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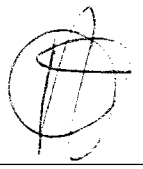

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ABSTRACT

Issues on research, innovation and commercialisation of nanotechnology have since become hot as some began disputing and debating the level of research and innovation on nanotechnology in Malaysia. In Malaysia, although small, nanotechnology based products have begun entering the market. Also, the number of companies commercialising this product is restricted. While studies on the success of nanotechnology commercialisation are being constantly discussed abroad, in Malaysia investigations on the subject are practically small. With this in mind, this study has identified factors closely related to the success of nanotechnology product commercialisation. Among the factors are capital investment, customer focus, management team, business strategy, product quality and company infrastructure. The sample for this study composed 93, consisting of companies currently commercialising nanotechnology. Questionnaires and mail were used in the survey process. The hypotheses were tested using correlation and regression analysis. The findings from the correlation reveal that capital investment, customer focus, management team, business strategy, product quality and company infrastructure have significant relationship with the success of nanotechnology commercialisation while regression analysis indicate that the combination of these factors contribute to the success of nanotechnology product commercialisation. However, only capital investment and business strategy showed any real significance on the success of nanotechnology commercialisation. Subsequently, a regression analysis was carried out, to order the importance of these factors. The results revealed that capital investment as being the most important factor, in this study, with β coefficient of 0.321 followed by business strategy with β coefficient of 0.316. The β coefficients for the other factors (company infrastructure, management team, customer focus and product quality) were small and not that significant.

Keywords: nanotechnology, commercialisation success, profit

ABSTRAK

Isu tentang penyelidikan, inovasi dan pengkomersialan nanoteknologi imenjadi isu hangat apabila terdapat segelintir pihak yang mempersoalkan tahap penyelidikan dan inovasi nanoteknologi di Malaysia. Di Malaysia, produk berasaskan nanoteknologi telah memasuki pasaran walaupun jumlahnya agak kecil. Selain itu, bilangan organisasi yang mengkomersialkan produk ini adalah terbatas. Meskipun kajian tentang faktor kejayaan pengkomersialan produk nanoteknologi telah banyak dibincangkan di luar negara, namun kajian ini masih kurang dijalankan di Negara ini. Bertitik tolak daripada hal ini, kajian ini mengenalpasti faktor-faktor yang mempunyai hubungkait dengan kejayaan pengkomersialan produk nanoteknologi. Antara faktor yang diteliti ialah faktor pelaburan modal, tumpuan pelanggan, pasukan pengurusan, strategi perniagaan, kualiti produk, dan infrastruktur syarikat. Sampel kajian meliputi sejumlah 93 syarikat yang mengkomersial kan nanoteknologi pada masa ini. Soalselidik dan surat-menyurat digunakan dalam tinjauan ini. Hipotesis kajian telah diuji dengan analisis korelasi dan regresi. Dapatan kajian daripada korelasi memperlihatkan bahawa pelaburan modal, tumpuan pelanggan, pasukan pengurusan, strategi perniagaan, kualiti produk dan infrastruktur syarikat mempunyai hubungkait yang signifikan dengan kejayaan pengkomersialan nanoteknologi. Analisis regresi pula memaparkan bahawa gabungan faktor-faktor ini membuahkan kejayaan pengkomersialkan produk nanoteknologi. Walaubagaimanapun, hanya pelaburan modal dan strategi perniagaan yang memberikesan yang benar-benar signifikan terhadap kejayaan pengkomersialan nanoteknologi. Seterusnya, analisis regresi dijalankan bagi menyusunatur faktor-faktor tersebut mengikut kepentingan. Hasil kajian mendapati bahawa modal pelaburan merupakan faktor terpenting dalam kajian ini dengan nilai pekali β sebanyak 0.321 diikuti oleh perancangan perniagaan dengan nilai pekali β sebanyak 0.316. Nilai β bagi faktor-faktor yang lain (infrastruktur syarikat, pasukan pengurusan, tumpuan pelanggan dan kualiti produk) adalah kecil dan tidak begitu signifikan.

Kata Kunci: nanoteknologi, kejayaan pengkomersialan, keuntungan

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LIST OF ABBREVIATIONS

ANF	Asia Nanotechnology Forum
NNI	National Nanotechnology Initiative
R&D	Research and development
MOSTI	Ministry of Science Technology and Innovation
TPM	Technology Park Malaysia
NCER	Northern Corridor Economic Region
MIGHT	Malaysia Industry Government Group for Higher Technology
MTDC	Malaysian Technology Development Corporation
MASTIC	Malaysia Science and Technology Information Centre
SR	Strategic Research
IRPA	Intensification of Research and Development in Priorities Area
IGS	Industry Research and Development Grant Scheme
TAF	Technology Acquisition Fund
DSM	Development of Standard Malaysia
DAGS	Demonstration Application Grant Scheme
CRDF	Commercialisation of Research and Development Fund

CHAPTER ONE

INTRODUCTION

1.1 Introduction

This chapter describes a brief research background that discusses the commercialisation issues in Malaysian context. It helps readers to capture the idea and inspiration for current research regarding nanotechnology commercialisation in Malaysia industry. Additionally, chapter one covers the problem statement, research questions, research objectives, and significance of the study along with the justification in the scope of study. Organisation of the thesis is provided at the end of the chapter.

1.2 Background of Study

Nanotechnology has been identified as a new source of economic growth. It is forecasted that nanotechnology sector will grow in an exponential rate for the next ten years. An increasing number of countries that drive nanotechnology initiatives have increased commercially viable nanotechnology-based products in the market. Table 1.1 shows the government funds for nanotechnology development.

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